

(57)

# ABSTRACT

This invention provides a process for producing a 5-hydroxy-3-oxopentanoic acid, a useful pharmaceutical intermediate, easily from a readily available, inexpensive starting material without using any extraordinary production equipment such as a very-low-temperature reactor.

Thus, this invention provides a process for producing a 5-hydroxy-3-oxopentanoic acid

which comprises permitting a lithium amide to act upon a mixture of an acetic acid ester and a 3-hydroxypropionic acid derivative at not below  $-20^{\circ}\text{C}$ .

Further, this invention also provides a process for producing a 5-hydroxy-3-oxopentanoic acid

which comprises treating a mixture of an acetic acid ester and a 3-hydroxypropionic acid derivative with a Grignard reagent to prepare a mixture of a compound and an acetic acid ester of the above formula (I),

and permitting a lithium amide to act upon the mixture at a temperature not below  $-20^{\circ}\text{C}$ .

(54) **PROCESSES FOR THE PREPARATION OF  
5-HYDROXY-3-OXOPENTANOIC ACID  
DERIVATIVES**

(75) Inventors: Akira Nishiyama; Kenji Inoue, both  
of Kakogawa (JP)

(73) Assignee: Kaneka Corporation, Osaka (JP)

(\*) Notice: Subject to any disclaimer, the term of this  
patent is extended or adjusted under 35  
U.S.C. 154(b) by 0 days.

(21) Appl. No.: 09/762,215

(22) PCT Filed: Jun. 2, 2000

(86) PCT No.: PCT/JP00/03574

§ 371 Date: Apr. 5, 2001

§ 102(e) Date: Apr. 5, 2001

(87) PCT Pub. No.: WO00/75099

PCT Pub. Date: Dec. 14, 2000

(30) **Foreign Application Priority Data**

Jun. 4, 1999 (JP) ..... 11-158033  
Feb. 1, 2000 (JP) ..... 2000-023084

(51) Int. Cl.<sup>7</sup> ..... C07C 51/00

(52) U.S. Cl. .... 554/115; 560/174; 554/115

(58) Field of Search ..... 554/154, 115;  
560/174

(56) **References Cited  
PUBLICATIONS**

Nskata et al., "Synthetic study of marin macrolide swin-  
bolide", Chem. Pharm. Bull., vol. 42, No. 11, p. 2403-05,  
1994.\*

\* cited by examiner

Primary Examiner—Deborah D. Carr

(74) Attorney, Agent, or Firm—Connolly Bove Lodge &  
Hutz LLP

(57) **ABSTRACT**

This invention provides a process for producing a  
5-hydroxy-3-oxopentanoic acid, a useful pharmaceutical  
intermediate, easily from a readily available, inexpensive  
starting material without using any extraordinary production  
equipment such as a very-low-temperature reactor.

Thus, this invention provides a process for producing a  
5-hydroxy-3-oxopentanoic acid

which comprises permitting a lithium amide to act upon  
a mixture of an acetic acid ester and a  
3-hydroxypropionic acid derivative at not below -20°  
C.

Further, this invention also provides a process for producing  
a 5-hydroxy-3-oxopentanoic acid

which comprises treating a mixture of an acetic acid ester  
and a 3-hydroxypropionic acid derivative with a Grig-  
nard reagent to prepare a mixture of a compound and an  
acetic acid ester of the above formula (I),

and permitting a lithium amide to act upon the mixture at  
a temperature not below -20° C.

**20 Claims, No Drawings**